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NiceZyme View of ENZYME: EC 2.4.2.4

Official Name

Thymidine phosphorylase.

Alternative Name(s)

Pyrimidine phosphorylase.

Reaction catalysed

Thymidine + phosphate \rightleftharpoons thymine + 2-deoxy-alpha-D-ribose 1-phosphate

Comment(s)

In some tissues also catalyzes deoxyribosyltransferase reactions of the type catalyzed by EC 2.4.2.6.

Human Genetic Disease(s)

Mitochondrial
neurogastrointestinal MIM:603041
encephalomyopathy

Cross-references

Biochemical

Pathways; map number(s) K8

PROSITE PDOC00557

BRENDA 2.4.2.4

PUMA2 2.4.2.4

PRIAM enzyme-specific profiles 2.4.2.4

Kyoto University
LIGAND chemical database 2.4.2.4

IUBMB Enzyme
Nomenclature 2.4.2.4

IntEnz 2.4.2.4

MEDLINE Find literature relating to 2.4.2.4

MetaCyc 2.4.2.4

O28928, TYPH1_ARCFU; O28927, TYPH2_ARCFU; Q8UJ08, TYPH_AGRT5
Q89QK7, TYPH_BRAJA; Q62EC5, TYPH_BURMA; Q63IV6, TYPH_BURPS
Q7NRT0, TYPH_CHRVO; Q483R6, TYPH_COLP3; Q8XB35, TYPH_ECO57

| | | | |
|----------------------|---------------------|---------------------|--------------------|
| UniProtKB/Swiss-Prot | Q8FA52, TYPH_ECOL6; | P07650, TYPH_ECOLI; | Q6D991, TYPH_ERWCT |
| | P19971, TYPH_HUMAN; | Q5QXT8, TYPH_IDILO; | P19663, TYPH_LACRH |
| | Q8RNP4, TYPH_LEGPN; | Q8TL01, TYPH_METAC; | Q58081, TYPH_METJA |
| | Q8Q0P9, TYPH_METMA; | Q99N42, TYPH_MOUSE; | P47297, TYPH_MYCGE |
| | P43050, TYPH_MYCHO; | P47717, TYPH_MYCPI; | P75052, TYPH_MYCPN |
| | O53366, TYPH_MYCTU; | Q6LUH3, TYPH_PHOPR; | Q9V163, TYPH_PYRAE |
| | Q8U0I2, TYPH_PYRFU; | O59251, TYPH_PYRHO; | Q5JCX3, TYPH_PYRKC |
| | Q8Y2X7, TYPH_RALSO; | Q98GV5, TYPH_RHILO; | Q92T50, TYPH_RHIME |
| | Q57G40, TYPH_SALCH; | Q5PK22, TYPH_SALPA; | Q8XF46, TYPH_SALTI |
| | Q7CP66, TYPH_SALTY; | Q8EHK3, TYPH_SHEON; | Q31SV7, TYPH_SHIBS |
| | Q327L4, TYPH_SHIDS; | Q83P01, TYPH_SHIFL; | Q3YU11, TYPH_SHISS |
| | Q9KPL8, TYPH_VIBCH; | Q5E7J6, TYPH_VIBF1; | Q87M23, TYPH_VIBPA |
| | Q8DBT1, TYPH_VIBVU; | Q7MI39, TYPH_VIBVY; | Q74PY8, TYPH_YERPE |
| | Q66EV9, TYPH_YERPS; | | |

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NiceZyme View of ENZYME: EC 4.1.2.13

Official Name

Fructose-bisphosphate aldolase.

Alternative Name(s)

Aldolase.

Fructose-1,6-bisphosphate triosephosphate-lyase.

Reaction catalysed

D-fructose 1,6-bisphosphate \rightleftharpoons glycerone phosphate + D-glyceraldehyde 3-phosphate

Cofactor(s)

Zinc.

Comment(s)

- Also acts on (3S,4R)-ketose 1-phosphates.
- The enzymes increase electron-attraction by the carbonyl group, some (Class I) form a protonated imine with it, others (Class II), mainly of microbial origin, polarizing it with a metal ion, e.g. zinc.
- Formerly EC 4.1.2.7.

Human Genetic Disease(s)

Fructose intolerance MIM:229600

Hemolytic anemia due to aldolase A deficiency MIM:103850

Cross-references

Biochemical Pathways; map number(s) C5 ; C6 ; U9

PROSITE PDOC00143 ; PDOC00523

BRENDA 4.1.2.13

PUMA2 4.1.2.13

PRIAM enzyme-specific profiles 4.1.2.13

Kyoto University LIGAND 4.1.2.13

chemical
database

IUBMB Enzyme
Nomenclature 4.1.2.13

IntEnz 4.1.2.13

MEDLINE Find literature relating to 4.1.2.13

MetaCyc 4.1.2.13

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| | | |
|----------------------|----------------------|----------------------|
| P04075, ALDOA_HUMAN; | P05064, ALDOA_MOUSE; | P00883, ALDOA_RABIT; |
| P05065, ALDOA_RAT; | P07341, ALDOB_CHICK; | P05062, ALDOB_HUMAN; |
| Q91Y97, ALDOB_MOUSE; | P79226, ALDOB_RABIT; | P00884, ALDOB_RAT; |
| P52210, ALDOB_SHEEP; | P53447, ALDOB_SPAAU; | P53448, ALDOC_CARAU; |
| P53449, ALDOC_CHICK; | P09972, ALDOC_HUMAN; | Q9GKW3, ALDOC_MACFA; |
| P05063, ALDOC_MOUSE; | Q5R1X4, ALDOC_PANTR; | P09117, ALDOC_RAT; |
| Q9YG90, ALF1_AERPE; | P13243, ALF1_BACSU; | P54216, ALF1_CAEEL; |
| Q9PKH8, ALF1_CHLMU; | Q9Z8Q7, ALF1_CHLPN; | O84217, ALF1_CHLTR; |
| Q97TN4, ALF1_CLOAB; | P0A992, ALF1_ECOL6; | P0A991, ALF1_ECOLI; |
| Q8RGH3, ALF1_FUSNN; | P53445, ALF1_LAMJA; | Q8ELI2, ALF1_OCEIH; |
| P46256, ALF1_PEA; | P60053, ALF1_PORGI; | Q9V2I6, ALF1_PYRAB; |
| P58314, ALF1_PYRFU; | O57840, ALF1_PYRHO; | Q8J308, ALF1_PYRKO; |
| Q59100, ALF1_RALEU; | P58336, ALF1_RHIME; | P27995, ALF1_RHOSH; |
| Q5HCU6, ALF1_STAAC; | P67472, ALF1_STAAM; | P99117, ALF1_STAAN; |
| Q6GDJ7, ALF1_STAAR; | Q6G670, ALF1_STAAS; | Q8NUM5, ALF1_STAAW; |
| Q07159, ALF1_STACA; | Q5HL21, ALF1_STAEQ; | Q8CMY5, ALF1_STAES; |
| Q4L9B6, ALF1_STAHJ; | P74309, ALF1_SYNY3; | P58315, ALF1_THETE; |
| Q73QV3, ALF1_TREDE; | Q8PHB5, ALF1_XANAC; | Q8P5Z7, ALF1_XANCP; |
| Q9PF52, ALF1_XYLFA; | Q87AI0, ALF1_XYLFT; | P42420, ALF2_BACSU; |
| P46563, ALF2_CAEEL; | P53446, ALF2_LAMJA; | P46257, ALF2_PEA; |
| P49577, ALF2_PLABA; | Q59101, ALF2_RALEU; | P56888, ALF2_RHIME; |
| P50923, ALF2_RHOC; | P29271, ALF2_RHOSH; | Q5HE75, ALF2_STAAC; |
| P67477, ALF2_STAAM; | P99075, ALF2_STAAN; | Q6GEV0, ALF2_STAAR; |
| Q6G7I5, ALF2_STAAS; | P67478, ALF2_STAAW; | Q5HM97, ALF2_STAEQ; |
| Q8CNI3, ALF2_STAES; | Q55664, ALF2_SYNY3; | Q42690, ALFC_CHLRE; |
| Q40677, ALFC_ORYSA; | Q01516, ALFC_PEA; | P16096, ALFC_SPIOL; |
| Q01517, ALFD_PEA; | P22197, ALF_ARATH; | Q9HGY9, ALF_ASPOR; |
| P94453, ALF_BACST; | O51401, ALF_BORBU; | P57526, ALF_BUCAI; |
| Q8K9B2, ALF_BUCAP; | Q89AB6, ALF_BUCBP; | P53818, ALF_CAMJE; |
| Q9URB4, ALF_CANAL; | O65735, ALF_CICAR; | P19537, ALF_CORGL; |
| P07764, ALF_DROME; | Q9GP32, ALF_ECHMU; | P0AB72, ALF_ECO57; |
| P0AB71, ALF_ECOLI; | O52402, ALF_EDWIC; | P44429, ALF_HAEIN; |
| Q9ZMQ6, ALF_HELPJ; | P56109, ALF_HELPY; | Q9C2U0, ALF_KLULA; |
| P91759, ALF_LYMST; | P08440, ALF_MAIZE; | P67476, ALF_MYCBO; |
| P47269, ALF_MYCGE; | O69600, ALF_MYCLE; | P75089, ALF_MYCPN; |
| P67475, ALF_MYCTU; | P53444, ALF_NEUCR; | Q9XDP3, ALF_NOSCO; |
| P17784, ALF_ORYSA; | Q8J0N6, ALF_PARBR; | P14223, ALF_PLAFA; |
| Q9I5Y1, ALF_PSEAE; | O87796, ALF_PSEST; | P53442, ALF_SCHMA; |
| P36580, ALF_SCHPO; | P0AB73, ALF_SHIFL; | P29356, ALF_SPIOL; |
| Q9X8R6, ALF_STRCO; | Q9ZEM7, ALF_STRGB; | P68905, ALF_STRP1; |
| Q8K5W5, ALF_STRP3; | Q5XA12, ALF_STRP6; | P68906, ALF_STRP8; |
| P0A4S1, ALF_STRPN; | P0A4S2, ALF_STRRR6; | Q703I2, ALF_THECA; |
| O83668, ALF_TREPA; | P07752, ALF_TRYBB; | Q9PPP3, ALF_UREPA; |
| Q56815, ALF_XANFL; | P14540, ALF_YEAST; | |

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Official Name

Purine-nucleoside phosphorylase.

Alternative Name(s)

Inosine phosphorylase.

PNPase.

Reaction catalysed

Purine nucleoside + phosphate \rightleftharpoons purine + alpha-D-ribose 1-phosphate

Comment(s)

- Specificity not completely determined.
- Can also catalyze ribosyltransferase reactions of the type catalyzed by EC 2.4.2.5.

Human Genetic Disease(s)

T-cell
immunodeficiency
with neurologic
disorder MIM:164050

Cross-references

| | |
|---|-------------------------------------|
| Biochemical Pathways; map number(s) | G1 ; I1 |
| PROSITE | PDOC00946 ; PDOC00954 |
| BRENDA | 2.4.2.1 |
| PUMA2 | 2.4.2.1 |
| PRIAM enzyme- specific profiles | 2.4.2.1 |
| Kyoto University LIGAND chemical database | 2.4.2.1 |
| IUBMB Enzyme Nomenclature | 2.4.2.1 |
| IntEnz | 2.4.2.1 |
| MEDLINE | Find literature relating to 2.4.2.1 |
| MetaCyc | 2.4.2.1 |

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|----------------------|----------------------|----------------------|
| Q6LUH1, DEOD1_PHOPR; | Q8EKK0, DEOD1_SHEON; | Q9KPM0, DEOD1_VIBCH; |
| Q5E7J4, DEOD1_VIBF1; | Q87M25, DEOD1_VIBPA; | Q8DBS9, DEOD1_VIBVU; |
| Q7MI41, DEOD1_VIBVY; | Q6LLA7, DEOD2_PHOPR; | Q8EHK0, DEOD2_SHEON; |
| Q9KNB2, DEOD2_VIBCH; | Q5E0H4, DEOD2_VIBF1; | Q87G42, DEOD2_VIBPA; |
| Q8D3Z2, DEOD2_VIBVU; | Q7MFG6, DEOD2_VIBVY; | Q8EDM4, DEOD3_SHEON; |
| Q5DYV8, DEOD3_VIBF1; | P94164, DEOD_ACTPL; | Q81T09, DEOD_BACAN; |
| Q73B32, DEOD_BACC1; | Q5EEL8, DEOD_BACCE; | Q81FV5, DEOD_BACCR; |
| Q63DR9, DEOD_BACCZ; | Q6HL92, DEOD_BACHK; | Q65IE9, DEOD_BACLD; |
| P77835, DEOD_BACST; | O34925, DEOD_BACSU; | P57606, DEOD_BUCAI; |
| Q8K937, DEOD_BUCAP; | Q89A58, DEOD_BUCBP; | Q7NRT2, DEOD_CHRVO; |
| Q894Z3, DEOD_CLOTE; | Q483Q8, DEOD_COLP3; | P0ABP9, DEOD_ECO57; |
| Q8FA51, DEOD_ECOL6; | P0ABP8, DEOD_ECOLI; | Q6D989, DEOD_ERWCT; |
| Q5KZM1, DEOD_GEOKA; | Q7VMS8, DEOD_HAEDU; | Q4QN30, DEOD_HAEI8; |
| P44417, DEOD_HAEIN; | Q9ZK38, DEOD_HELPJ; | P56463, DEOD_HELPY; |
| Q59482, DEOD_KLEPN; | Q9CH10, DEOD_LACLA; | O32810, DEOD_LACLC; |
| Q92AF2, DEOD_LISIN; | Q71YG0, DEOD_LISMF; | Q8Y644, DEOD_LISMO; |
| Q65RA4, DEOD_MANSM; | P47295, DEOD_MYCGE; | P47724, DEOD_MYCPI; |
| P75053, DEOD_MYCPN; | Q8ENY0, DEOD_OCEIH; | Q9CLE6, DEOD_PASMU; |
| Q7N930, DEOD_PHOLL; | Q3ICU8, DEOD_PSEHT; | Q57G38, DEOD_SALCH; |
| Q5PK20, DEOD_SALPA; | Q8Z0U2, DEOD_SALTI; | Q8ZJV7, DEOD_SALTY; |
| Q31SV5, DEOD_SHIBS; | Q327L2, DEOD_SHIDS; | Q83P00, DEOD_SHIFL; |
| Q3YU09, DEOD_SHISS; | Q56037, DEOD_STRTR; | Q8R973, DEOD_THETN; |
| O83716, DEOD_TREPA; | Q8KRT5, DEOD_XENNE; | Q8ZIQ2, DEOD_YERPE; |
| Q66EV7, DEOD_YERPS; | P55859, PNPB_BOVIN; | P00491, PNPB_HUMAN; |
| P23492, PNPB_MOUSE; | Q05788, PNPB_YEAST; | P77834, PUNA_BACST; |
| P46354, PUNA_BACSU; | P81989, PUNA_CELSP; | P0A539, PUNA_MYCBO; |
| P46862, PUNA_MYCLE; | P0A538, PUNA_MYCTU; | |

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NiceZyme View of ENZYME: EC 2.4.2.6

Official Name

Nucleoside deoxyribosyltransferase.

Reaction catalysed

2-deoxy-D-ribosyl-base(1) + base(2) <=> 2-deoxy-D-ribosyl-base(2) + base(1)

Comment(s)

Base(1) and base(2) represent various purines and pyrimidines.

Cross-references

| | |
|---|---|
| BRENDA | 2.4.2.6 |
| PUMA2 | 2.4.2.6 |
| PRIAM enzyme-specific profiles | 2.4.2.6 |
| Kyoto University LIGAND chemical database | 2.4.2.6 |
| IUBMB Enzyme Nomenclature | 2.4.2.6 |
| IntEnz | 2.4.2.6 |
| MEDLINE | Find literature relating to 2.4.2.6 |
| MetaCyc | 2.4.2.6 |
| UniProtKB/Swiss-Prot | Q6YNI5, NTD_LACFE; Q74LQ9, NTD_LACJO; Q9R5V5, NTD_LACLE |

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NiceZyme View of ENZYME: EC 5.4.2.7

Official Name

Phosphopentomutase.

Alternative Name(s)

Deoxyribomutase.

Deoxyribose phosphomutase.

Phosphodeoxyribomutase.

Reaction catalysed

Alpha-D-ribose 1-phosphate <=> D-ribose 5-phosphate

Comment(s)

- Also converts 2-deoxy-alpha-D-ribose 1-phosphate into 2-deoxy-alpha- D-ribose 5-phosphate.
- Alpha-D-ribose 1,5-bisphosphate, 2-deoxy-alpha-D-ribose 1,5- bisphosphate, or alpha-D-glucose 1,6-bisphosphate can act as cofactor.
- Formerly EC 2.7.5.6.

Cross-references

BRENDA 5.4.2.7

PUMA2 5.4.2.7

PRIAM enzyme-specific profiles 5.4.2.7

Kyoto University LIGAND chemical database 5.4.2.7

IUBMB Enzyme Nomenclature 5.4.2.7

IntEnz 5.4.2.7

MEDLINE Find literature relating to 5.4.2.7

MetaCyc 5.4.2.7

| | | |
|---------------------|---------------------|---------------------|
| Q8UJ04, DEOB_AGRT5; | Q81ME0, DEOB_BACAN; | Q818Z9, DEOB_BACCR; |
| Q9KCN9, DEOB_BACHD; | O24821, DEOB_BACST; | P46353, DEOB_BACSU; |
| P57607, DEOB_BUCAI; | Q8K936, DEOB_BUCAP; | Q89A57, DEOB_BUCBP; |
| Q7NRT1, DEOB_CHRVO; | Q97HE6, DEOB_CLOAB; | Q8XNE7, DEOB_CLOPE; |
| Q894Z2, DEOB_CLOTE; | Q9RSI9, DEOB_DEIRA; | P0A6K8, DEOB_ECO57; |
| P0A6K7, DEOB_ECOL6; | P0A6K6, DEOB_ECOLI; | Q839I2, DEOB_ENTFA; |
| Q9ZK37, DEOB_HELPJ; | P56195, DEOB_HELPY; | Q9CH12, DEOB_LACLA; |

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| | | |
|---------------------|---------------------|---------------------|
| O32808, DEOB_LACLC; | Q92A54, DEOB_LISIN; | Q71Y60, DEOB_LISMF; |
| Q8Y5V1, DEOB_LISMO; | Q98QT4, DEOB_MYCPU; | Q8EQ67, DEOB_OCEIH; |
| Q7N931, DEOB_PHOLL; | Q98BG5, DEOB_RHILO; | Q92T47, DEOB_RHIME; |
| P63924, DEOB_SALTI; | P63923, DEOB_SALTY; | Q8EHK2, DEOB_SHEON; |
| P0A6K9, DEOB_SHIFL; | Q5HJM9, DEOB_STAAC; | P63925, DEOB_STAAM; |
| P99100, DEOB_STAAW; | Q6GKG6, DEOB_STAAR; | Q6GCY5, DEOB_STAAS; |
| P63926, DEOB_STAAW; | Q5HM86, DEOB_STAEQ; | Q8CNH9, DEOB_STAES; |
| Q4L817, DEOB_STAHJ; | Q49Z82, DEOB_STAS1; | Q8CMH7, DEOB_STRA3; |
| Q8CMH6, DEOB_STRA5; | Q8DTU0, DEOB_STRMU; | P63927, DEOB_STRP1; |
| P63928, DEOB_STRP3; | Q5XCL5, DEOB_STRP6; | Q8P1C4, DEOB_STRP8; |
| Q97RI6, DEOB_STRPN; | Q8DQD0, DEOB_STRR6; | Q9EUQ2, DEOB_STRTR; |
| Q9WY14, DEOB_THEMA; | Q8RCG6, DEOB_THETN; | Q9KPL9, DEOB_VIBCH; |
| Q87M24, DEOB_VIBPA; | Q8DBT0, DEOB_VIBVU; | Q7MI40, DEOB_VIBVY; |
| Q8ZIQ3, DEOB_YERPE; | | |

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Transferred entry: 5.4.2.2

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NiceZyme View of ENZYME: EC 5.4.2.2

Official Name

Phosphoglucomutase.

Alternative Name(s)

Glucose phosphomutase.

Phosphoglucose mutase.

Reaction catalysed

Alpha-D-glucose 1-phosphate <=> alpha-D-glucose 6-phosphate

Comment(s)

- Maximum activity is only obtained in the presence of alpha-D-glucose 1,6-bisphosphate
- This bisphosphate is an intermediate in the reaction, being formed by transfer of a phosphate residue from the enzyme to the substrate, but the dissociation of bisphosphate from the enzyme complex is much slower than the overall isomerization.
- Also, more slowly, catalyzes the interconversion of 1-phosphate and 6-phosphate isomers of many other alpha-D-hexoses, and the interconversion of alpha-D-ribose 1-phosphate and 5-phosphate.
- Formerly EC 2.7.5.1.

Cross-references

| | |
|---|-------------------------------------|
| Biochemical Pathways; map number(s) | B5 ; U9 |
| PROSITE | PDOC00589 |
| BRENDA | 5.4.2.2 |
| PUMA2 | 5.4.2.2 |
| PRIAM enzyme-specific profiles | 5.4.2.2 |
| Kyoto University LIGAND chemical database | 5.4.2.2 |
| IUBMB Enzyme Nomenclature | 5.4.2.2 |
| IntEnz | 5.4.2.2 |
| MEDLINE | Find literature relating to 5.4.2.2 |

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|----------------------|----------------------|----------------------|
| P26276, ALGC_PSEAE; | Q88C93, ALGC_PSEPK; | Q88BD4, ALGC_PSESM; |
| P36871, PGM1_HUMAN; | Q4R5E4, PGM1_MACFA; | Q9D0F9, PGM1_MOUSE; |
| P00949, PGM1_RABIT; | P38652, PGM1_RAT; | P33401, PGM1_YEAST; |
| Q6PCE3, PGM2L_HUMAN; | Q8CAA7, PGM2L_MOUSE; | Q5R979, PGM2L_PONPY; |
| Q96G03, PGM2_HUMAN; | Q7TSV4, PGM2_MOUSE; | Q5RFI8, PGM2_PONPY; |
| P37012, PGM2_YEAST; | O49299, PGMC1_ARATH; | P93804, PGMC1_MAIZE; |
| Q9SGC1, PGMC2_ARATH; | P93805, PGMC2_MAIZE; | Q9SNX2, PGMC_BROIN; |
| P93262, PGMC_MESCR; | Q9SM60, PGMC_PEA; | Q9ZSQ4, PGMC_POPTN; |
| Q9M4G4, PGMC_SOLTU; | Q9SCY0, PGMP_ARATH; | Q9SMM0, PGMP_BRANA; |
| Q9SM59, PGMP_PEA; | Q9M4G5, PGMP_SOLTU; | P38569, PGM_ACEXY; |
| P39671, PGM_AGRTU; | P57749, PGM_ASPOR; | Q23919, PGM_DICDI; |
| Q9VUY9, PGM_DROME; | Q7KHA1, PGM_DROSI; | P36938, PGM_ECOLI; |
| Q9P931, PGM_EMENI; | O18719, PGM_ENTDI; | O15820, PGM_ENTHI; |
| P40390, PGM_NEIGO; | P57002, PGM_NEIMA; | P40391, PGM_NEIMB; |
| O74374, PGM_SCHPO; | P29955, XANA_XANCP; | |

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